

ABSTRACT

The present invention provides a polymer electrolyte fuel cell having an increased reaction area by forming a gas channel, a proton channel and an electron channel very close to each other inside a catalyst layer. This polymer electrolyte fuel cell includes a hydrogen ion conductive polymer electrolyte membrane; and a pair of electrodes having catalyst layers sandwiching the hydrogen ion conductive polymer electrolyte membrane between them and gas diffusion layers in contact with the catalyst layers, in which the catalyst layer of at least one of the electrodes comprises carbon particles supporting a noble metal catalyst, and the carbon particles include at least two kinds of carbon particles adsorbing a hydrogen ion conductive polymer electrolyte in mutually different dispersed states.